

## REMARKS

The Applicants have carefully reviewed the Office Action mailed October 19, 2006 and offer the following remarks.

Claims 1-3, 6, 7, 11-13, 16-18, 21, 22, 26-28, and 31 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,125,109 to *Fuerter* (hereinafter "*Fuerter*") in view of U.S. Patent No. 7,069,051 B1 to *Katz* (hereinafter "*Katz*") and further in view of U.S. Patent Application Publication No. 2003/0148747 A1 to *Yamamoto* (hereinafter "*Yamamoto*"). The Applicants respectfully traverse the rejection.

According to Chapter 2143.03 of the M.P.E.P., in order to "establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." The Applicants submit that none of the references, either singularly or in combination, disclose or suggest all the features recited in claims 1-3, 6, 7, 11-13, 16-18, 21, 22, 26-28, and 31. In particular, claim 1 recites a method for combining signals comprising, among other features, "translating the first receive signal from the first antenna to being centered about a second center frequency" where the second receive signal is centered about a frequency different from the second center frequency. As correctly pointed out in the Office Action, *Fuerter* does not disclose translating receive signals to being centered about different frequencies.<sup>1</sup>

Similarly, *Katz* does not disclose or suggest this feature. In maintaining the rejection, the Patent Office states that *Katz* discloses "first translation circuitry 112 and 113 (Fig. 2, going from RF signal to an IF signal broadband to narrowband) adapted to translate the first receive signal from the first antenna to being centered about a second center frequency."<sup>2</sup> *Katz* does not disclose or suggest translating a first receive signal to being centered about a second center frequency where a second receive signal is centered about a frequency different from the second center frequency. At most, *Katz* discloses a radio frequency part 112 which transfers a signal to an intermediate frequency and then forwards the transferred signal to a demodulator 113 which returns the broadband signal to a narrowband signal. However, according to *Katz*, the radio frequency part 112 transfers all signals to the same frequency. As such, *Katz* cannot disclose or suggest that only one signal is transferred to being centered about a second center frequency. In a similar fashion, *Yamamoto* does not disclose or suggest this feature.

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<sup>1</sup> See Office Action mailed October 19, 2006, p. 3.

<sup>2</sup> See Office Action mailed October 19, 2006, pp. 3-4.

In addition, claim 1 recites “combining the first receive signal centered about the second center frequency and the second receive signal to form a composite signal.” Claims 16 and 31 include similar features. The Applicants respectfully submit that none of the references, either singularly or in combination, disclose or suggest combining a first receive signal centered about a second frequency with a second receive signal centered about a different frequency to form a composite signal. In maintaining the rejection, the Patent Office indicates that *Fuerter* discloses “combining circuitry 38 (Fig. 2) adapted to combine the first receive signal 16a (Fig. 2) centered about the second center frequency and the second receive signal 16n (Fig. 2) to form a composite signal 40.”<sup>3</sup> The Applicants respectfully disagree. The maximal ratio combiner 38 disclosed in *Fuerter* does not combine a first receive signal centered about a second frequency and a second receive signal centered about a different frequency to form a composite signal. Instead, the maximal ratio combiner 38 combines an energy associated with incoming signal paths thereby yielding the sum of the per finger per bit energy to noise density ratio.<sup>4</sup> The Applicants submit that the sum of the per finger per bit energy to noise ratio vastly differs from a composite signal which is a combination of two signals centered about different frequencies. Likewise, neither *Katz* nor *Yamamoto* disclose or suggest this feature. Accordingly, claims 1, 16, and 31, along with claims 2, 6, 11-13, 17, 21, and 26-28, which variously depend from either claim 1 or claim 16, are patentable over the cited references and the Applicants request that the rejection be withdrawn.

Claim 3 recites that the “first center frequency and the second center frequency are sufficiently spread to minimize interference between the first and second receive signals in the composite signal.” Claim 18 includes similar features. The Applicants respectfully submit that none of the references, either singularly or in combination, disclose or suggest these features. In maintaining the rejection, the Patent Office states *Fuerter* discloses “wherein the first center frequency and the second center frequency are sufficiently spread to minimize interference 36 (Rake Fingers, Fig. 2) between the first 16a (Fig. 2) and second 16n (Fig. 2) receive signals in the composite signal.”<sup>5</sup> The Applicants respectfully disagree. While the rake fingers 36 track and demodulate a single path 12, the rake fingers 36 do not provide a first center frequency and a second center frequency where the respective frequencies are spread to minimize interference

<sup>3</sup> See Office Action mailed October 19, 2006, p. 3.

<sup>4</sup> See *Fuerter*, col. 4, ll. 41-44.

<sup>5</sup> See Office Action mailed October 19, 2006, p. 4.

between the first and second receive signals in the composite signal.<sup>6</sup> Accordingly, in addition to the reasons noted above, claims 3 and 18 are patentable over the cited references and the Applicants request that the rejection be withdrawn.

Claim 7 recites that “a plurality of receive signals, including the second receive signal, are received and translated to being centered about different center frequencies and combined to form the composite signal.” Claim 22 includes similar features. The Applicants submit that neither *Fuerter* nor *Yamamoto*, either singularly or in combination, disclose or suggest receiving a plurality of receive signals, translating them to being centered about different frequencies, and combining them to form a composite signal. Similarly, *Katz* does not disclose or suggest this feature. As discussed above, *Katz* only discloses a radio frequency part 112 that transfers signals to an intermediate frequency where the radio frequency part 112 transfers all signals to the same intermediate frequency. Therefore, claims 7 and 22 are patentable for this reason in addition to the reasons noted above and the Applicants request that the rejection be withdrawn.

Claims 4, 5, 14, 15, 19, 20, 29, and 30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Fuerter* in view of *Katz* and *Yamamoto* and further in view of U.S. Patent No. 6,657,978 B1 to *Millman* (hereinafter “*Millman*”). The Applicants respectfully traverse the rejection.

As mentioned above, claims 1 and 16, the base claims from which claims 4, 5, 14, 15, 19, 20, 29, and 30 respectively depend, are patentable over *Fuerter*, *Katz*, and *Yamamoto*. *Millman* does not overcome the previously noted shortcomings of *Fuerter*, *Katz*, and *Yamamoto*. Therefore, claims 4, 5, 14, 15, 19, 20, 29, and 30 are patentable over the cited references. Furthermore, claims 4, 5, 14, 15, 19, 20, 29, and 30 are patentable for the novel features recited therein, as will be described in greater detail below.

Claim 4 recites “translating the second receive signal from the second antenna to being centered about a third center frequency, wherein the first receive signal centered about the second center frequency is combined with the second receive signal centered about the third center frequency to form the composite signal.” Claim 19 includes similar features. As correctly pointed out in the Office Action, neither *Fuerter*, *Katz*, nor *Yamamoto*, disclose or suggest a third frequency.<sup>7</sup> Similarly, *Millman* does not disclose or suggest a third frequency. In maintaining

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<sup>6</sup> See *Fuerter*, col. 4, l. 67 through col. 5, l. 1.

<sup>7</sup> See Office Action mailed October 19, 2006, p. 6.

the rejection, the Patent Office indicates that *Millman* discloses these features at col. 9, l. 61 through col. 10, l. 55.<sup>8</sup> The Applicants have reviewed this portion of the cited reference along with the rest of the reference and submit that *Millman* does not disclose or suggest a third frequency. At most, *Millman* discloses an uplink signal having a first center frequency and a downlink signal having a second center frequency.<sup>9</sup> Therefore, for this additional reason, claims 4 and 19 are patentable over the cited references and the Applicants respectfully request that the rejection be withdrawn. Claims 5 and 20, which variously depend from claims 4 and 19, are also patentable for at least the same reasons and the additional novel features recited therein.

Claim 14 recites that the first frequency is associated with a first cellular band and a fourth center frequency is associated with a second cellular band. Claim 29 includes similar features. In maintaining the rejection, the Patent Office indicates that *Millman* discloses these features at col. 2, ll. 25-29 and 32-37.<sup>10</sup> The Applicants have reviewed these portions along with the rest of the reference and submit that *Millman* does not disclose or suggest a frequency which is associated with a cellular band, much less a first frequency associated with a first cellular band and a fourth frequency associated with a second cellular band.

Claim 14 also recites “receiving a third receive signal centered about a third center frequency from the first antenna; receiving a fourth receive signal centered about the third center frequency from the second antenna,” and “translating the third receive signal from the first antenna to being centered about a fourth center frequency.” Claim 29 includes similar features. The Applicants submit that none of the references, either singularly or in combination, disclose or suggest these features. As detailed above, *Millman* does not disclose or suggest a third center frequency. Similarly, *Millman* does not disclose or suggest a fourth center frequency. Accordingly, *Millman* cannot disclose or suggest a third receive signal centered about a third center frequency and a fourth receive signal centered about a third frequency. Likewise, as *Millman* does not disclose or suggest a fourth center frequency, it follows that *Millman* cannot disclose or suggest translating a third receive signal to being centered about a fourth center frequency.

Claim 14 also recites “combining the third receive signal centered about the third center frequency and the second receive signal to form at least part of the composite signal.” Claim 29

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<sup>8</sup> See Office Action mailed October 19, 2006, p. 6.

<sup>9</sup> See *Millman*, col. 10, ll. 36-38.

<sup>10</sup> See Office Action mailed October 19, 2006, p. 7.

includes similar features. As discussed above, none of the cited references, either singularly or in combination, disclose or suggest the feature of combining receive signals to form a composite signal. Therefore, for at least this reason and the reasons noted above, claims 14 and 29 are patentable over the cited references and the Applicants request that the rejection be withdrawn. Claims 15 and 30, which depend from claims 14 and 29 respectively, are also patentable for at least this reason and the additional novel features recited therein.

Claims 8, 9, 23, and 24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Fuerter* in view of *Katz* and *Yamamoto* and further in view of U.S. Patent Application Publication No. 2003/0109283 A1 to *Shapira et al.* (hereinafter “*Shapira*”). The Applicants respectfully traverse the rejection.

Claim 8 recites “separating the first and second receive signals from the composite signal in the base station electronics.” Claim 23 recites similar features. The Applicants submit that none of the references, either singularly or in combination, disclose or suggest separating first and second receive signals from a composite signal. As correctly pointed out in the Office Action, *Fuerter*, *Katz*, and *Yamamoto* do not disclose this feature.<sup>11</sup> Similarly, *Shapira* does not disclose or suggest this feature. In maintaining the rejection, the Patent Office indicates that *Shapira* discloses “separation circuitry 15a (Fig. 1) adapted to separate the first and second receive signals from the composite signal.”<sup>12</sup> The Applicants respectfully disagree. The element having reference numeral 15a in *Shapira* does not separate first and second receive signals from a composite signal. Instead, the element having reference numeral 15a refers to a diplexer which allows for the simultaneous transmission and reception of signals.<sup>13</sup> Thus, for this reason and the reasons noted above, claims 8 and 23, along with claims 9 and 24 which depend therefrom, are patentable over the cited references and the Applicants respectfully request that the rejection be withdrawn.

Claims 10 and 25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Fuerter* in view of *Katz* and *Yamamoto* and further in view of *Shapira* and *Millman*. The Applicants respectfully traverse the rejection.

Claim 10 recites that “the second receive signal is translated to a third center frequency before being combined with the first receive signal to form the composite signal.” Claim 25

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<sup>11</sup> See Office Action mailed October 19, 2006, p. 8.

<sup>12</sup> See Office Action mailed October 19, 2006, p. 8.

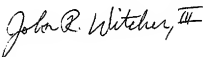
<sup>13</sup> See *Shapira*, p. 2, paragraph [0030].

recites similar features. As previously detailed, neither *Fuerter*, *Katz*, *Yamamoto*, nor *Millman*, either singularly or in combination, disclose or suggest a third frequency nor combining a second receive signal with a first receive signal to form a composite signal. Similarly, *Shapira* does not disclose or suggest any of these features. As such, claims 10 and 25 are patentable over the cited references and the Applicants request that the rejection be withdrawn.

The present application is now in condition for allowance and such action is respectfully requested. The Examiner is encouraged to contact the Applicants' representative regarding any remaining issues in an effort to expedite allowance and issuance of the present application.

Respectfully submitted,

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